

IN-SITU MONITORING AND CONTROL OF GERMANIUM PROFILE
IN SILICON-GERMANIUM ALLOY FILMS AND TEMPERATURE
MONITORING DURING DEPOSITION OF SILICON FILMS

ABSTRACT OF THE DISCLOSURE

Analysis of residual gases from a process for depositing a film containing silicon on a crystalline silicon surface to determine partial pressure of hydrogen evolved during deposition develops a signature which indicates temperature and/or concentration of germanium at the deposition surface. Calibration and collection of hydrogen partial pressure data at a rate which is high relative to film deposition rate allows real-time, in-situ, non-destructive determination of material concentration profile over the thickness of the film and/or monitoring the temperature of a silicon film deposition process with increased accuracy and resolution to provide films of a desired thickness with high accuracy.